

What is claimed is:

1. An apparatus for monitoring functions of a power source, said apparatus comprising:

a first non-conductive medium;

a resistive element in contact with said non-conductive medium;

a plurality of electro-conductive elements, at least one of said electro-conductive elements being electrically coupled to said resistive element and a least one said electro-conductive element capable of carrying at least one of power and data signals; and

means for attaching said non-conductive medium to the power source.

2. The apparatus of claim 1 further comprising a second non-conductive medium layered over said first non-conductive medium to form a multi-layered construct.

3. The apparatus of claim 1 wherein said resistive element is thermally resistive.

4. The apparatus of claim 3 wherein said thermally resistive element is an ink.

5. The apparatus of claim 1 wherein at least one of said plurality of conductive elements is an ink.

6. The apparatus of claim 1 wherein said non-conductive medium is a thin material that is flexible and capable of conforming to one or more surfaces of a power source.

7. The apparatus of claim 1 wherein said apparatus is configured to be of a thin covering similar to a product label applied to the exterior of a power source.

8. The apparatus of claim 1 further comprising a printable exterior surface for displaying indicia.

9. The apparatus of claim 1 further comprising an interface to a data-enabled power

source.

10. The apparatus of claim 1 wherein said apparatus has a reconfigurable geometry adapted to conform to diverse locations of contact on a battery pack housing.

11. The apparatus of claim 1 further comprising replaceable portions.

12. The apparatus of claim 1 wherein said attaching means is a low-tack adhesive.

13. The apparatus of claim 1 wherein said apparatus is a conductor of a data signal.

14. The apparatus of claim 1 further comprising means for enabling a power source and a host device to simultaneously and concurrently be independently powered from one or more external sources.

15. The apparatus of claim 14 wherein said enabling means is in part a Y-connector.

16. The apparatus of claim 14 further comprising a jumpered connector for reconfiguring power and data signal lines.

17. An apparatus for monitoring functions of a power source, said apparatus comprising single non-conductive stratum upon which is applied an area of continuous thermally-resistive ink, said area of ink being partitioned into segments by the application of a plurality of conductive elements, whereby each segment of said area of ink provides an independent thermistor that can be accessed by said plurality of conductive elements, at least one of said conductive elements sharing an adjacent segment of said area of ink.

18. An apparatus for monitoring functions of a power source, said apparatus comprising a thin, conformable assembly that attaches to a plurality of power sources, said assembly having sufficient dielectric strata sandwiching at least one device from the group consisting of a thermistor, data lines, power signal lines, and connectors, whereby one or more of

the said sandwiched-strata comprise sub-assemblies that can be configured, alone or with each other in multiple form factors, to enable said assembly to perform a plurality of functions related to monitoring said power source.

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